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Critical thinking is nowadays

The intelectual roots of critical thinking are as ancient as its etymology, traceble, ultimately, to the teahcing practice and vision of Socrates 2,500 years ago who discovered by a method of probing questioning that people could not rationally justify their confident claims to knowledge.

He established the importance of asking deep questions, seeking evidense, closely examining reasoning and assumptions, analyzing basic concepts, and tracing out implications not only of what is said but of what is done as well. His method of questioning is now known as "Socratic questioning" and is the best known critical thinking teaching strategy.

Socrates practice was followed by the critical thinking of Plato (who recorded Socrates thout), Aristotle and the Greek skeptics.

In the Renaissance (15th and 16th Centuries), a flood of scholars in Europe began to think critically about religion, art, society, human nature,law, and freedom. They proceed with the assumption that most of the domains of human life were in need of searching analysis and critique. Among these scholars were Colet, Erasmus, and More in England.

It was in this spirit of intellectual freedom and critical thought that people such as Robert Boyle (in the 17th century) and Sir Isaac Newton(in the 17th and 18th Century) did their work.In his Sceptical Chymist, Boyle severely criticized the chemical theory that had preceeded him. Newton, in turn, developed a far –reaching framework of thought which roudly crirticized the traditionally accepted world view. He extanded the critical thought of such minds as Copernicus, Galileo, and Kepler. After Boyle and Newton, it was recognized by those who reflected seriously on the natural world that egocentric views of world must be abandoned in favor of views based entirely on carefully gathered evidence and sound reasoning.

Nowadays critical thinking is an important and vital topic in modern education. All educators are interested in teaching critical thincing to their students. Many academic departments hope that its professors and instructors will become informed about the strategy of teaching critical thinking skills, identify areas in one`s courses as the proper plays to emphasize and teach critical thinking, and develop and use some problems in exams that test students critical thinking skills.

Critical thinking is that mode of thinking about any subject, content, or problem in which the thinker improves the quality of his or her thinking by skillfully analyizing, assessing, and reconstructing it. Critical thinking is self- directed, self-disciplined, self-monitored, and self-corrective thinking.It presupposes assent to rigorous standards of excellence and mindfull command of their use. It entails effective communication and problem-solving abilities, as well as a commitment to overcome our native egocentrism and sociocentrism. It is a set of skills, abilities and traits which, when learned, help you function better as a person-in every part of your life

Critical reflection can be improved beginning in the early grades when teachers understand these thinking processes themselves. Before students can analyzes arguments, tease out the assumptions contained in them, or recognized possible motives which shape people`s views or restrict their objectivity, they must have a sense of themselves and of others as persons of worth. This sense is built from an understanding of human feelings and of how individuals behavior affects the persons around them. Kindergarten teachers began to develop such understanding from the first day of school, through activities which engage students emotions while helping acquire a language to express these emotions. It is also important for teachers of young children to offer support to students in solving their own social problems and conflicts, but not to impose solutions upon them. Critical thinking begins when a child is expected to confront in their own thinking, the reasons for treating other people with respect and the ways in which one can do so.

Quality of thought also improves through direct encounter with reality- with the concrete and with the natural materials which can be provided in an expanded school environment. An important aspect of the teacher ^ role in providing students with concrete materials and real life experiences is to ask critical questions which foster stundent reflection about these material and experiences.

Perhaps the most important aspect in developing a climate conductive to critical thinking is to increase stundents^ will or motivation to behave reflectively. While there are many ways to learn and to know, the knowledge retained by students is that knowledge which they find relevant to their daily lives or which can be integrated into larger systems of knowledge. This does not meann that learning should always be easy or that all knowledge should have immediate relevance. It also is not intended to imply that memorization and drill are necessarily inappropriate or meaningless activities. Rather, the suggestion is that students will voluntarily exercise their own willpower and persevere at difficult learning tasks(including memorization when necessary), if they see llearning tasks as personally meaningful. For educators, this means portraying knowledge as valuable in itself and as a means to important human ends. Thus , the knowledge which students encounter in schools must not be presented solely as isolated or discrete elements,but rather should be explored as parts meaning full wholes. Knowledge must be examined in terms of its realitionships supports critical and creative thinking. In short words teaching critical thinking will enrich stundents`college yaers by providing them with a highly positive learning experience, acquainting them with concepts and strategies that they can apply in other classes as well ,and giving them encouragement to be responsible to a great extent for there own learning. It is appropriate outside the classroom in more and more situations. The ability to think effectively, evaluating ideas from different perspectives is becoming increasingly important in today`s multicultural interdependent world. When we refine students` thinking skills, we impower them as individuals. In this way , we are helping them to become responsibly and productive members of society.

What is critical thinking? The concept of critical thinking embedded not only in a core body of research over the last 30 to 50 years but also derived from roots in ancient Greek. The word` critical ` derives etimologically from two Greek roots: ` kriticos` (meaning descerning judgement) and "kriterion" (meaning standards). Etimologically, then, the word implies the development of " diserning judgement based on standards."

In Webster`s New World Dictionary, the relevant entry reads " characterized by careful analysis and judgement" and is followed by the gloss: " critical, in its strictest sense, implies an attempt at objective judgement so as to determine both merits and faults." Applied to thinking , then, we might provisionally define critical thinking as thinking that explitcitly aims at well –founded judgement and hence utilizes appropriate evaluvative standards in the attempt to determine the true worth, merit, or value of something.

A basic concept of critical thinking is, at root, simple. We could define it as the art of taking charge of your own mind, we can take charge of lives; we can impove them, bringing them under ourselve command and direction. Of course, this requires that we learn self- discipline and the art of self- examination. This involves becoming interested in how our minds work, how we can monitor, fine tune, and modify their operations for the better. It involves getting into the habit of reflectively examining our impulsive and accustomed ways of thinking and acting in every difention of our lives.

Critical thinking means correct thinking in the pursuit of relevant and reliable knowledge about the wolrd. Another way to describe reasonable, reflective, responsible and skillful thinking that is focusid on desinding what to believe or do. A person who thinks critically can ask appropriate questions, gather relevant information, efficienrly and creatively sort through this information, reason logically from this information and come to reliable and trustworthy conclusions about the world that enable one to live and act successfully in it.Critical thinking is not being able to process information well enough to know to for red lights or whether you received the correct change at the supermarket. Such low-order thinking , critical and useful though it may be, is sufficient only for personal survival; most individuals master this.True critical thinking is higher-order thinking, enabling a personto, for example, responsibly judge between politicai candidates, serve on a murder trial jury, evaluate society`s need for nuclear power plants, and assess the concequences of global warming.Critical thinking enables an individual to be responsible citizen who contributes to society, and not be merely a consumer of society`s distractions.

Children are no born with the power to think critically, nor do they develop this ability naturally beyond survival-level thinking. Critical thinking is a learned ability that must be taught. Most individuals never laern it.Critical thinking can not be taught reliably to students by peers or by

most parents. Trained or knowledgeble instructors are necessary to impart the proper information and skills. Math and science instructors have precisely this information and these skills

Critical thinking can be described as the scientific method applied by ordinary people to the ordinary world. This is true because critical thinkig mimics the well-known method of scientific investigation; a question is identified, an hypothesis formulated, relevant datd sought and gathered, the hypothesis is logically tested and evaluated, and reliable conclusions are drawn from the result. All of the skills of scientific investigation are matched by critical thinking, which is therefore nothing more than scietific method used in every day life rather than in specifically scientific disciplines or endeavors. Critical thinking is scientific thinking. Many books and papers describing critical thinking present it`s goals and methods as identical or similar to the goals and methods of science. A scientifically-literate person, such as a math or science instructor, has learned to think critically to achieve that level of scientific awareness. But any individual with an advanced degree in any university discipline has almost certainly learned the techniques of critical thinking.

Critical thinking is the ability to think for one's self and reliably and responsibly make those decisions that effect one's life. Critical thinking is also critical inquiry, so such critical thinkers investigate problems, ask questions, pose new answers that challenge the status quo, discover new information that can be used for good or ill, question authorities and traditional beliefs, challenge received dogmas and doctrines, and often end up possessing power in societygreatewr than their numbers. It may be that a workable society or culture can tolerate only a small number of critical thinkers, that learning, internalizing, and practicing scientific and critical thinking is discouraged. Most people are followers of authority: most don't question are nor curious, and do not challenge authority figures who claim special knowledge or insight. Most people, therefore, do not think for themselves, but rely on others to think for them. Most people indulgein wishful, hopeful, and emotional thinking, believing that what they believe is true because they wish it, hope it, or feel it to be true. Most people, therefore, don't think critically.

Also critical thinking has many components. Life can be discribed as a sequence of problems that each individual must solve for one's self. Critical thinking skills are nothing more than problem solving skills that result in reliable knowledge. Humans constantly process information. Critical thinking is the practice of processing this information in the mos skillful, accurate, rigorous manner possible, in such a way that it leads to the most it reliable, logical, and trustworthy conclusions, upon which one can make responsible decisions about one's life, behavior, and actions with full knowlede of assumptions and consequences of those decisions.

Raymond S. Nickerson (1987), an authority on critical yhinking, characterizes a good critical thinker in terms of knowledge, abilties, attitudes, and habitual ways of behaving. Here are some of the characteristics of such a thinker:

- uses evidence skillfully and impartially
- organizes thoughts and articulates them concisely and coherently
- distinguishers between logically valid and invalid inferences
- suspends judgement in the absence of sufficient evidence to suppurt a decision
- understands the difference between reasoning and rationalizing
- attempts to anticipate the probable consequencesof alternative actions
- understands the idea of digrees of belief
- sees similiarities and analogies that are not superficially apparent
- can learn independently and has an abiding interest in doing so
- applies problem –solving techniques in domain other than those in wich learned
- can structure informally represented problems in such a way that formal techniques, such as mathematics, can be used to solve them
- can strip a verbal argument of irrelevancies and phrase it in its essential terms
- habitually questions one's own views and attempts to understand both the assupmtions that are critical to those views and implications of the views
- is sensitive to the difference between the validity of a belief and the intensity with which it is held
- is aware of the fact that one's understanding is always limited, often much more so than would be apparent to one with a non –inquiring attitude

- recognizes the fallibility of one's own opinions, the probability of bias in those opinions, and the danger of weighting evidence according to personal references

Why teach Critical Thinking? Teaching traditionally includes the first two levels of easier skills, knowledge and comprehension. But it is important for teachers to include activities and questions that require learners to use higher and more difficult levels of thinking such as application, analysis, synthesis and evaluation. An education system that teaches only memorization of information, but doesn't teach students t ask "Why?" will produce adults who may believe that everything they hear or read is true and factual.

Even the youngest students cn use Critical Thinking with activities that lead them step –by – step to solve problems. For example, "We have three students but only two chairs. What shall we do?" The problem solving skills learned by school children are later used in their adult years. For example, "We have twenty –two schools in our town, but only sixteen qualified English teachers. What shall we do?" Problem –solving activities help students learn to use information in many different ways –not just remember it.

The purpose of specifically teaching critical thinking is to improve the thinking skills of students and thus better prepare them to succeed in the world. But, you may ask, don't we uatomatically teach critical tinking when we teach our subjects, especially mathematics and science, th two disciplines which supposedly epitomize correct and logical thinking? The answer, sadly, is often no. Please consider these two auotations:

  "It is strange that we expect students to learn, yet seldom teach them anything about klearning." Donald Norman, 1980, "Cognitive engineering and education," in Problem Solving and Education: Issues in Teaching and Research, edited by D. T. Tuna and F. Reif, Erlbaum Publishers.
"We should be teaching stdents how to think. Instead, we are teaching them whhat to think." Clement and Lochhead, 1980, Cognitive Process Instittution.

Perhaps you can now see the problem. All education consists of transmitting to students two different things:
  (1) the subject matter or discipline content of the course ("what to think");
  (2) the correct eay to understand and evaluate this subject matter ("how to think"). We do an excellent job of transmitting the contents of our respective academic disciplines, but we often fail to teach students how to think effectively about this subject matter, that is, how to properly understand and evaluate it. This second abilit is termed critical thinking. All educational disciplines have reported the difficulty of imparting critical thinking skills. In 1983, in its landmark report A Nation at Risk, the National Commission on Excelence in Education warned:

"Many 17 –year –olds do not possess the 'higher –order ' intelectual skills we should expect of them. Nearly 40 per cent cannot draw inferences from written material; only one –fifth can write a persuasive essay; and only one –third can solve a mathematics problem requiring severa steps."

Many students never develop critical thinking kills. Why? There are a number of reasons. The first goal of education, "what to think", is so traditionally obvious that instructors and studentsmay focus all their energies and efforts on the task of transmitting and acquiring basic knowledge. Indeed, many students find that this goal alone is so overwhelming that they have time for little else. On the other hand, the second goal of education,"how to think"or critical thinking, is often so subtle that instructors fail to recognize it and students fail to realize its absence.

All that we do, we do on the basis of some motivations or reasons.But we rarely examine our motivations to see if they make sense. We rarely scrutinize our reasons critically to see if they are rationally justified. As consumers we somenimes buy things impulsively and uncritically, without stopping to determine whether we really need what we are inclined to buy or whether we can effort it or whether its good for our health or whether the price is competitive. As parents we often respond to our children impulesively and uncritically without stopping to determine whether our actions sre consistant with how we want to act as parents or whether we are contibuting to their selfesteem or whether we are discouraging them from thinking or from taking responsibility for their own behavior.

The tradition of research inti critical thinking reflects the common perception that human thinking left to itself often gravitates toward prejudice, over-generalization, common fallacies, self-deception, rigidity,and narrowness.The critical thinking tradition seeks ways of understanding the mind and then training the intellect so that such "errors", "blunders", and "distortions" of thought are minimized. It assumes that the capacity of humans for good reasoning can be nurtured and developed by an educational process aimed directly at that end. It assumes that sound critical thinking maximises our ability to solve problems of importance to us by helping us both to avoid common mistakes and to proceed in the most rational and logical fashion.

For example, those who think critically typically engage in intellectual practices of the following sort: monitoring, reviewing, and assessing; goals and pruporses; the way issues and problems are formulated; the information, data, or evidence; the quality of reasoning presented or developed, basic concepts or ideas inherent in thinking, assumptions made, implications and consequences that may or may not follow; points of view and frames of reference. In monitoring, reviewing and assesing this intellectual constructs, those who thinc critically characteristically strieve for such intellectual ends as clarity, precision, accuracy, relevance, depth, breadth, and logicalness. Each of this modes of thinking help us to accomplish the ends for which we are thinking and hence to solve the problems inherent in pursuing those ends.

From all this written we can make conclusion that teaching critical thinking is about teaching students HOW to think; it is not about teaching them what to think. It is teaching students more than memorize and repeat. It is teaching students more than remember and retell. It is teaching students to ask "Why?" Why did that happen? Who did that? What did he do? Why did he do that? Where did that begin? When will it end?

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